ALI MOHAMMAD TAYEB

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EDUCATION

SHOROUQ AL MAMLAKAH INTERNATIONAL SCHOOL *Taif, Saudi Arabia*
High School Diploma, General STEM Track *Expected 2025*

Relevant Courses: Calculus 1+2, General Chemistry, AP Computer Science A, Physics: Mechanics + Electricity & Magnetism, Statistics

EXPERIENCE

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS *Dhahran, Saudi Arabia*
Research Assistant @ Carbon Capture Labs *Jul 2023 – Aug 2023 + Oct 2023 – Present*

- Developed and refined machine learning algorithms to predict CO2 uptake efficiency in Porous Organic Polymers (POPs), resulting in a **20% increase** in accuracy compared to previous methods, after reviewing over **400 POPs**.
- Co-authoring 2 papers: an article on Cu-linked CTFs for CO_2RR and a review paper on the advancements and applications of COFs in CO_2 capture, projected to publish each paper into peer-reviewed Q2 journals
- Mentored 4 peers participating in the Regeneron International Science and Engineering Fair "ISEF" qualifiers in the lab, providing guidance on techniques and data analysis, leading to their completion of research projects

MATHEMATICAL ASSOCIATION OF AMERICA *Remote*
Saudi Chapter Lead *Oct 2023 – Present*

- Presented innovative plans to a panel of PhDs to make mathematics competitions more inclusive and accessible in Saudi Arabia, resulting in an increase in participation among students all over Saudi Arabia
- Hosted a series of math tournaments specifically tailored for underprivileged individuals, successfully creating an engaging and exciting environment for 100+ students to showcase their mathematical skills

BULGARIAN ACADEMY OF SCIENCES *Remote*
Student Researcher *Jul 2023 – Oct 2023*

- Utilized Dynamic Programming, Graph Theory, and Heuristic Search to develop a comprehensive understanding of these informatics techniques and solve the infamous "Japanese Triangle Problem"
- Implemented data science principles into my sports blog by utilizing Python and R to visualize and analyze **50+ NBA-related statistics**.

PROJECTS

NBA Most Valuable Player (MVP) Predictor using ML *Feb 2024*

- Utilized historical game statistics and player performance data to train the machine learning model, resulting in an unprecedented accuracy rate of **85%** in predicting MVP winners.
- Utilized Python's BeautifulSoup package to scrape and extract player data from Basketball references, resulting in a comprehensive dataset of **5000+** records for analysis, prediction, and training purposes.

Stephen Curry Shot Predictor (ML) *June 2024*

- Utilized advanced Neural Networks to analyze Stephen Curry's shooting data and accurately predict shot outcomes with a remarkable **65% accuracy rate**, outperforming available models by **over 5%.**

SELECTED PUBLICATIONS

- Ijtihed Kilani, Khuram Usman Mir, Ahmed Samir Elkady, **Ali M. Tayeb**, Using Informatics Concepts in Solving Mathematics Olympiad Questions. *Authorea.* September 11, 2023.

ACHIEVEMENTS

Top 400 / 40,000+ participants – Bronze Medalist; National Mawhiba Informatics Competition *Jan 2024*
1550 / 1600 SAT®; College Board, 800 Math + 750 English (99th %ile internationally) *Oct 2023*
1665 / 2000 Qiyas Aptitude Test; Mawhiba Gifted Students Program, 99th %ile nationally *Feb 2023*

SKILLS

Research Skills: Materials Design/Modification (MOFs, COFs, CTFs, ZIFs), XRD, BET, SEM, TEM, Dynamic Breakthroughs, TGA, CO_2 Sequestration, CO_2RR

Analysis/Modelling: Python (Numpy, Pandas, Matplotlib, Tensorflow, SciKitLearn), R (nbaStatR, ggplot2), Java, mySQL, JavaScript, CSS, HTML, PHP